United States
Environmental Protection
Agency

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EPA

FACT SHEET

Proposed Plan
Belding Warehouse Superfund Site
Belding, Michigan
September 1997

Introduction

The U.S. Environmental Protection Agency (U.S. EPA) is issuing this Proposed Plan to describe the current status of the cleanup action at the Belding Warehouse (BW) Superfund site, also known as the H & K Sales site, and to present the U.S. EPA's recommendation that no additional cleanup actions under the **Superfund**[1] program need occur at the BW site. The U.S. EPA has removed the radiologically contaminated aircraft components that were stored at the BW site and transported the materials to approved facilities for disposal. Currently, the U.S. EPA and the MDEQ are performing a final and confirmatory radiation detection survey to insure that all of the radiologically contaminated aircraft components and associated materials have been removed from the BW site. At the completion of this cleanup action, there will not be any radiologically contaminated wastes or residuals exceeding standards (see Table 1, page 5) left at the BW site; thus, the U.S. EPA proposes that no further Superfund cleanup action takes place at the BW site. The State of Michigan supports this proposal and is expected to formally concur with the selected remedy upon completion of the public comment period and the confirmatory radiation survey.

This Proposed Plan summarizes information described in several reports that were issued periodically prior to the startup of the cleanup action that is now being conducted. You are encouraged to review these reports, as well as other site-related documents, for details on the development and evaluation of this Proposed Plan. This information is available in the Administrative Record and the Information Repository (see last page for location).

Your input on this Proposed Plan is an important contribution to the Superfund cleanup selection process. Based on new information and/or public comment, the U.S. EPA may either modify its recommendation or present another cleanup alternative(s) in a subsequent Proposed Plan. You are encouraged to review all of the information and provide your comments on the Proposed Plan for the BW site.

Background

The BW site is located at 100 East Main Street in Belding, Ionia County, Michigan. The site is the portion of the Belding Warehouse facility in which World War II (WWII) era military-surplus aircraft components had been stored since 1994. Some of the aircraft components are marked with paint containing **radium-226**, which is a naturally occurring, but hazardous, radioactive material.

The Belding Warehouse facility is located on several acres of land in a commercial section of town. The property is bounded by the Flat River on the north, Bridge Street on the west, and adjacent industrial buildings on the east and south. Several

[1] **Words in bold appear in the glossary on page 6**

schools, a hospital, and many residences are located within a one-mile radius of the site; almost 6,000 people live within this area.

The Belding Warehouse facility is privately owned and consists of two main buildings. The BW site is a single-story building consisting of three large rooms, each approximately 10,000 square feet in area. This building has a concrete floor and foundation, brick and block walls, and a metal roof. Two of the three rooms were packed with crates of the WWII surplus material; the third room was empty. Evidence of cracks in the concrete floor, leaks in the roof, and floor drains with an uncertain discharge location pointed towards the potential for release of radium-226 into the environment. The building is attached to a separate, three-story building that was not used for storage of the surplus material and thus was not contaminated (see Figure 2, Site Features Map).

Site History

In the late 1940s, Aircraft Components, Inc., of Benton Harbor, Michigan, purchased the radium-painted aircraft components as military surplus for resale. Aircraft Components stored the surplus material in several Benton Harbor locations, including in its main warehouse building which is now also a Superfund cleanup site. After the owners of the company died in the early 1990s, the main warehouse building in Benton Harbor was sold along with its contents. The new owners of the Benton Harbor warehouse sold some of the surplus material to a salvage facility in Arkansas whose radiation alarm was tripped during a delivery of the material. The facility notified the Arkansas Department of Health, which traced the shipment to Michigan and then notified the Michigan Department of Public Health's Division of Radiological Protection. The Division of Radiological Protection is now called the Drinking Water and Radiological Protection Division and is a part of the Michigan Department of Environmental Quality (MDEQ).

MDEQ staff determined that the origin of the material was the Aircraft Components Inc., warehouse in Benton Harbor. The MDEQ interviewed the new owners of the warehouse and determined that a large portion of their inventory had been sold to another Michigan firm (H & K Sales) and moved to Belding. The MDEQ investigated the Belding Warehouse facility in late September 1994 and estimated that thousands of radium-painted gauges and other aircraft components were packed in wooden crates inside part of the warehouse facility. Using radiation detection equipment, the MDEQ measured ambient gamma ray dose rate readings within the building at more than 700 times the level that naturally occurs in Michigan. In October 1994, the U.S. EPA and the MDEQ conducted a radiological survey at the site and confirmed the MDEQ's initial findings.

In June 1995, the **Agency for Toxic Substances and Disease Registry** issued a public health advisory and recommended that the site be addressed by the U.S. EPA without delay. ATSDR was concerned that a fire at the warehouse could result in the widespread dispersal of radium into the environment by the smoke plume and by water runoff into the adjacent Flat River. In September 1995, the site was nominated for inclusion on the U.S. EPA's National Priorities List (NPL), which names the nation's worst hazardous waste sites and makes them eligible for study and cleanup under the Superfund law. The site was added to the NPL in July 1996.

In October 1995, the U.S. EPA met with officials from the U.S. Air Force in Washington, D.C. and requested that they undertake the cleanup of the radium-226-painted materials. (The U.S. EPA considers the Air Force, which originally sold the radium-painted gauges and other materials to Aircraft Components, to be a potentially responsible party as defined by the Superfund law.) The Air Force declined to participate in a cleanup at that time, citing budgetary and logistical reasons.

In February 1996, the U.S. EPA, with assistance from the MDEQ, conducted a detailed inspection of the site and prepared a document called an Engineering Evaluation/Cost Analysis (EE/CA). An EE/CA is a type of study that the U.S. EPA uses to evaluate removal program cleanup alternatives and to request Superfund money for cleanup of sites that pose immediate threats to public health and the environment. A site risk evaluation performed for the EE/CA by

the U.S. EPA concluded that people working in the warehouse buildings could be exposed to harmful levels of radium and/or radon gas (which is generated by the radioactive decay of radium). U.S. EPA and MDEQ shared ATSDR's concern that radium could be released to the environment should there be a fire, or as the result of other events such as vandalism or theft.

Community Involvement

In April 1996, the U.S. EPA released the EE/CA and the Proposed Plan, which summarized the two cleanup alternatives evaluated to address the contamination at the site. A public meeting was held in Belding to explain the Proposed Plan and to solicit comments from the public. The public also was encouraged to submit written comments on the Proposed Plan during a 30-day comment period. After responding to comments received during the comment period, the U.S. EPA selected the final cleanup plan in July 1996. The plan estimated that it would cost $12.2 million and take six months to clean up the site. At this time, funding was also secured to conduct an immediate cleanup (removal) action.

Summary of Site Cleanup

The U.S. EPA began the planning stage of the cleanup in September 1996. At that time, the U.S. EPA contracted with another federal agency, the U.S. Department of the Interior's Bureau of Reclamation (USBR), to manage the cleanup. On-site cleanup work began in January 1997 and included the following activities:

- The building was secured to prevent release of radiation to the environment during the handling of the radium-painted materials and to prevent entrance to the clean-up areas by untrained persons;

- A detailed, base-line radiation survey using radiation-detection devices was performed in the buildings: 1) to determine where "hot-spots" existed to alert site clean-up workers and prevent exposure to high doses of radiation during the cleanup; and 2) to more accurately predict where radium-painted items were stored (before the large number of storage crates were opened for sorting);

- Radium-painted materials were segregated and packed into proper containers for shipment to a disposal facility in the state of Washington. Two shipments, each containing an average of 85 containers of radium-painted materials, were sent off-site for disposal. Each container held between 200 and 300 radium-painted components, which means more than 34,000 radium-painted aircraft components were transported off-site for disposal;

- A waste shredder was set up in the building to process packaging materials and other non-hazardous items for disposal in a local landfill. These materials were tested to ensure that they did not exceed the federal criterion for disposal of radioactive items in municipal landfills. (The federal criterion is ten times lower than the state criterion, which means that the state criterion was followed as well.) Approximately 55 loads of material were sent to the local landfill; each load contained about 540 cubic feet (averaging about 4.5 tons) of shredded wastes, for a total of 29,700 cubic feet (247 tons). Using the local landfill was a safe and less-costly alternative to sending the non-hazardous wastes to a disposal facility in Utah;

- Approximately 1,000 cubic feet of material was packaged and shipped to a low-level radioactive waste disposal facility in Utah. This material was not painted with radium-226, but

had enough radium-226 dust in it to exceed the federal criterion for disposal in the local landfill;

- More than 4,500 cubic feet of aircraft components and other materials were subjected to radiation surveys, cleaned if necessary, and then released back to the original owners (H&K Sales, Inc.) for unrestricted use, including resale to collectors, etc. Items such as airplane propellers, nuts and bolts, and certain pieces of heavy machinery were reclaimed by the owners, saving the U.S. EPA substantial sums in disposal costs; and

- Smaller amounts of other hazardous items, including radium-226-painted components containing such materials as mercury and diesel fuel, were properly packaged and shipped off-site for disposal. For example, the mercury-containing components were shipped to a processing facility in Texas where the mercury will be reclaimed for re-use. The radium-226-painted components will be sent to the disposal facility in the state of Washington.

Currently, the U.S. EPA and MDEQ are performing a final and confirmatory radiation survey of the affected buildings to assure that the cleanup has been completed. Using the data from the radiation survey, those portions of the building floors and walls that may contain levels of radium-226 above standards (see Table 1) will be cleaned before the buildings are released back to the owner for unrestricted use.

Although the U.S. EPA has not yet determined a final cost for cleaning up the BW site, the Agency estimates that the amount will be much less than the original $12.2 million estimate, perhaps as low as $6-7 million. The cleanup will take about 10 months to complete instead of the original 6-month estimate.

No Further Action Recommended

The U.S. EPA proposes that no further Superfund cleanup actions take place at the BW site. The U.S. EPA is making this recommendation since the site will no longer contain radium-226 above standards (see Table 1) or above naturally-occurring levels once the cleanup action is completed. Since the warehouse buildings have been emptied of the radium-226-painted materials, the risk of release of radium-226 to the environment (air, ground water, surface water, or soil) by a fire or other means has ended. Likewise, radon gas levels have fallen to very low levels inside the buildings. Hence, the increased risks to human health and the environment posed by the BW site have been removed.

The standards to be achieved by the cleanup action are those generally used by the U.S. Nuclear Regulatory Commission (NRC) and the Drinking Water and Radiological Protection Division of the MDEQ to allow for the “unrestricted release ”of property. Unrestricted release is the term applied to the future uses of any items of property, without regard to restrictions, so that the public will not be exposed to unacceptable levels of radiation and/or radioactive materials. Table 1, below, gives the minimum standards to be met for unrestricted release and are “Acceptable Surface Contamination Levels” based on NRC and MDEQ guidelines.

TABLE 1 ACCEPTABLE SURFACE CONTAMINATION LEVELS FOR RADIUM-226	
Average Level, Total Surface	100 dpm (alpha particles) per 100 square centimeters
Maximum Level	300 dpm (alpha particles) per 100 square centimenters
Removable Amount	20 dpm (alpha particles) per 100 square centimeters

Notes: 1. dpm (disintegrations per minute) means the number of radium-226 atoms emitting radiation per minute as measured on the surface of an item by an appropriate radiation detector. The detector reading must be corrected for how well (or efficient) the detector is in measuring radiation and for background (naturally-occurring) radiation levels in the area. Disintegration of radium-226 atoms causes the emission of an alpha particle from the nucleus of the radium atom, leaving behind a new element. An alpha particle is generally a helium atom nucleus. 2. The Average Level should be based on readings taken on less than 1 square meter (10,000 square centimeter) surface areas. 3. The Maximum Level cannot be taken from an area that exceeds 100 square centimeters. 4. The Removable Amount of radiation levels refers to radium-226 particles that are not fixed to a surface but that can be removed from the surface by wiping the surface with a soft absorbent paper, thereby transferring the radium-226 to the paper. 5. The source of these standards is the U.S. Atomic Energy Commission (now the NRC) Regulatory Guide 1.86: Termination of Operating Licenses for Nuclear Reactors, June 1974.

Next Steps

The Belding Warehouse facility is scheduled to be returned to the owner for unrestricted use in the near future. Subsequently, the U.S. EPA will make the necessary preparations to remove the site from the NPL and to attempt to recover the U.S. EPA's site cleanup costs from the U.S. Air Force and/or from other potentially responsible parties. In general, recovered cleanup costs are used by the U.S. EPA to fund cleanup actions at other Superfund sites throughout Michigan and the rest of the country.

Note: The U.S. EPA's Superfund policy requires the release of this Proposed Plan since the BW site is listed on the NPL. The U.S. EPA is recommending that no further cleanup actions under Superfund occur because contaminants at the BW site will be completely addressed under the current U.S. EPA removal action. Under normal circumstances for NPL sites, the U.S. EPA is required to perform a study of the extent of contamination and then release for public comment a listing of a range of cleanup alternatives it is considering prior to beginning a long term or remedial cleanup action. In this case, the removal action was thorough and left nothing behind for the Superfund remedial program to address. The State of Michigan supports this proposal and is expected to formally concur with the selected remedy after the completion of the public comment period and the confirmatory radiation survey.

Glossary

Agency for Toxic Substances and Disease Registry (ATSDR) - A branch of the U.S. Department of Health and Human Services that is based in Atlanta, Georgia. Under Superfund, ATSDR is authorized to provide health effects information to U.S. EPA. ATSDR's major responsibilities are to evaluate information on the release of hazardous substances into the environment to assess the impact on public health; develop health advisories; and to identify studies or actions needed to evaluate human health effects. Among the publications issued by ATSDR are toxicological profiles of individual chemicals substances used in the United States. These profiles contain information on the uses, health risks, and possible means of human exposure associated with each chemical, and are updated regularly to include recent research findings.

Gamma - a type of high-energy radiation emitted by the nucleus of an atom. Gamma rays are the most penetrating type of radiation and represent the major external hazard from radioactive materials because the can pass through dense materials and can easily penetrate the skin to irradiate major organs.

Radium - an intensely radioactive white metallic element that was formerly used in the production of luminous materials. **Radium-226**, a radioactive isotope of radium, decays to a long series of other radioactive elements, which collectively emit alpha, beta and gamma radiation.

Superfund - the common name for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This law authorizes the federal government to respond directly to releases (or threatened released) of hazardous substances that may endanger public health, welfare, or the environment. The U.S. EPA is responsible for managing the Superfund program.

FOR ADDITIONAL INFORMATION

If you have questions about the information in this fact sheet or would like additional information about the Belding Warehouse site, please write or call the individuals listed below:

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U.S. EPA Region 5 Toll-Free Number: 1-800-621-8431 (10:00 a.m. - 5:30 p.m., Eastern Time)

The EE/CA report, fact sheets, and other site-related documents relating to the Belding Warehouse site are available for review in the local information repository, which has been established at the location listed below:

Alvah N. Belding Library
302 East Main Street
Belding, Michigan

Library hours are Monday and Thursday, 9 a.m. to 8 p.m.; Tuesday, Wednesday and Friday, 9 a.m. to 5 p.m.; and Saturday, 9 a.m. to 1 p.m.

An administrative record, which contains the information upon which the selection of the recommended alternative was based, has also been established at the Alvah N. Belding Library and at the U.S. EPA Region 5 office in Chicago.